DOOSAN

Document Transmittal

Upper Trishuli-1 HEP (216MW)

Date	DT No.:	SHEET
2022-07-31	UT1-HEP-DHI-PC-D-0050	1 OF 1

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SUBJECT	Submission of Review Note RN-0203 and RN-0204		

S. N.	REVIEW NOTE NO.	REVIEW STATUS	DWG. / DOC. NO.	REV.	DWG. TITLE / DOC. DESCRIPTION	REMARK
1	RN-0203	AN	UT1-C-090-CVL-DG-64002	0C	Excavation and Support of Main Access Tunnel to Powerhouse	
2	RN-0204	AN	UT1-C-150-CVL-DG-43010	0	Access Road To Adit-4	
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Legend of Review Status
A : APPROVED
AN : APPROVED AS NOTED
RR : RETURN FOR RESUBMISSION
FI : FOR INFORMATION

DHI STAMP

Doosan Enerbility Co., Ltd
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Discipline : Civil

UPPER TRISHULI-1 HEP (216MW)

Client	**Nepal Water and Energy Development Company Private Limited**
Owner's Engineer	**Tractebel Engineering GmbH / Jade Consult**

REVIEW NOTE

Contractor	**Doosan Enerbility**		
Title of the Document	Access Road To Adit-4		
Document No.	UT1-C-150-CVL-DG-43010	Revision	0
Date of Documents	28.07.2022	Received Date	29.07.2022
Transmittal Form No.	UT1-HEP-DHI-D-0322		
Previous Review Date/Status	FI	Prev. Review Note No.	N/A
Review Note No.	**RN-0204**	**Present Review Date**	**29.07.2022**
		Present Review Status	**AN**

A: Approved AN: Approved as Noted RR: Returned for Resubmission FI: For Information, only

Comments

1. Beside the submission of the document under this revision, the submitted letter *OE-TJ-UT1-OUT Site-DHI 258 "Design Access Road Adit #4"*, dated 17th of July 2022, needs to be responded by the EPC Contractor.
2. The Non-Conformance Report *NCR No. 063 "Adtit #4-Air Vent Tunnel Surge Chamber"* , dated 17th of July 2022 remains open.
3. Maximum longitudinal incline is significantly higher as per *EPC Contract ANNEX 13 – B2-6.5 Road Design Criteria – Standard of Geometrical Structure*, see table below.
4. Curve radius is not indicated in the drawings. Minimum curve radius shall be as per *EPC Contract ANNEX 13 – B2-6.5 Road Design Criteria – Standard of Geometrical Structure*, see table below.

13-B2-6.5 Standard of Geometrical Structure

Classification	Design Speed			Remark
	NEPAL Road Standards		KOREA Road Standard	
	30km/hr	25km/hr	20km/hr	
Formation width	5.5	5.5	3.75	Variable as per site condition
Carriageway width	3.5	3.5	3.0	Variable as per site condition
Shoulder width	1.0	1.0	0.75	Variable as per site condition
Minimum horizontal curve radius (m)	30	22	15	$R=\frac{0.0079 \cdot V^2}{(e+f)}$
Minimum length of horizontal curve segment (m)	33.3	27.8	22.2	$L=\frac{t}{3.6} \cdot V$
Maximum longitudinal incline (%)	12	12	16	
Camber (carriageway) (%)	4	4	3	
Application	Access road		Construction road	

※ Minimum radius curvature and road width shall be based on the design standard vehicle.(Refer to Clause 6.1)

Acceptance of deviation of contractual values is subject of approval by the Employer.

5. On the Plan View, sheet 1 of 13, the elevation of point **T2** of the Air Ventilation Tunnel is indicated with **1.255 masl**. However, as per the transient calculation report doc. ref.: *UT1-E-300-MEA-DC-02002 Rev.0C, chapter 6 Conclusions,* the **maximum upsurge level of the Upstream Surge Tank reaches to 1.264,5 masl**. This needs to be respected by defining the elevation of endpoint T2 of Air Ventilation Tunnel of the Surge Shaft, including sufficient free board as safety factor. This will have impact to the longitudinal inclination of the Air Ventilation Tunnel of the Surge Shaft.
6. Especially at the high inclined road sections, adequate fall protection needs to be provided to avoid fatal accidents of heavy trucks in the event of brake failure.
7. The road alignment needs to be implemented in the Environmental Management Plan.
8. Adequate drainage, including drainage water from the tunnels, has to be elaborated.
9. Cross sections are still shown indicatively only.
10. Sufficient niches for passing traffic shall be considered and defined.

Disclaimer:

Any approval will not release the Contractor from any of his obligations under the Contract. Despite the Engineer's approval the Contractor remains fully responsible for design, calculation, dimensioning, supply and installation without limitations.

Sebastian Beck, Chief Design Engineer